

REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is requested. The present amendment is in response to the Office Action mailed August 21, 2003 and the Advisory Action mailed December 16, 2003. As the amendment after final filed by applicant on October 13, 2003 would have been entered for purposes of appeal only (and as a result of the present RCE is not being entered), the following remarks repeat substantial portions of the remarks made in the amendment after final. Claims 1-3, 21-22, 24-26, and 28-39 are in this application. Claims 1, 25, 26, 32, and 33 have been amended. Claims 4-20, 23, and 27 have been cancelled. Claims 38 and 39 have been added to additionally and alternately claim the present invention.

Applicant requests the Examiner to indicate whether the substitute drawings have been entered into the application. On August 9, 2002, applicant filed three sheets of formal drawings that included FIGs. 1, 2, 3, and 4 which, in turn, were received by the U.S. Patent Office on August 14, 2002. As of September 29, 2003, the Patent Application Information Retrieval (PAIR) system did not reflect that the formal drawings had been received by the Office.

As a result, on September 29, 2003, applicant re-submitted the formal drawings that were filed on August 9, 2002 to the U.S. Patent Office as substitute drawings in accordance with 37 CFR §1.21(b)(3) to replace the informal drawings that were filed with the application. The substitute drawings included FIGs. 1, 2, 3, and 4.

In the amendment filed on May 21, 2003, applicant proposed drawing changes to FIG. 1, which the Examiner subsequently approved. As a result, one replacement drawing sheet of FIG. 1 is attached to the end of this paper as an Appendix. Please use the attached replacement drawing sheet of FIG. 1 to replace the substitute drawing sheet of FIG. 1 that was re-submitted to the Office on

September 29, 2003. The attached replacement drawing sheet includes no new matter.

The Examiner rejected claims 1-3, 22, 24, 25, 28-30, and 32 under 35 U.S.C. §103(a) as being unpatentable over Wark (U.S. patent 6,399,416) in view of Wolf et al. (*Silicon Processing for the VLSI Era*, Vol. 2, Lattice Press, 2000, pages 826-829). The Examiner also objected to claim 23, but indicated that claim 23 would be allowable if amended to be in independent form and include all of the limitations of the base claim and any intervening claims.

With respect to claim 1, this claim has been amended to include the limitations of objected-to claim 23. As a result, independent claim 1 and dependent claims 2-3, 22, and 24 are patentable over Wark in view of Wolf. In the Advisory Action mailed December 16, 2003, the Examiner indicated that claims 1-3, 22, and 24 would be allowable.

With respect to independent claim 25, this claim recites, in part,

"a passivation layer formed on the interconnect, the passivation layer having a top surface, a rectangularly-shaped center region of the top surface, and a peripheral region of the top surface that surrounds the center region, the peripheral region having four interior sides, four exterior sides, and four widths measured from each of the four interior sides to a corresponding exterior side, the four widths being substantially equal;

"a plurality of first bonding pads formed on the passivation layer only in the peripheral region, the first bonding pads being electrically connected to the interconnect; [and]

"a plurality of second bonding pads formed on the passivation layer only in the center region, the second bonding pads being electrically connected to the interconnect." [Brackets added.]

In rejecting the claims, the Examiner argued that the plurality of first bonding pads are formed on the passivation layer only in the peripheral region, and the plurality of second bonding pads are formed on the passivation layer only in the center region. The Wark reference, however, does not teach or suggest a

rectangularly-shaped center region that includes the second bonding pads, and a peripheral region with equal widths that includes the first bonding pads as required by amended claim 25.

As shown in FIG. 2, Wark teaches that the bonding pads on the top surface of die 26 are formed in the periphery around the four exterior sides a substantially constant distance away from the four exterior sides. As a result, it is not possible to define a center region on the top surface of die 26 where the plurality of second bonding pads are formed only in the center region, and a peripheral region on the top surface of die 26 where the plurality of first bonding pads are formed only in the peripheral region, which has four substantially equal widths. As a result, claim 25 is patentable over Wark in view of Wolf. In addition, since claims 28-31 depend from claim 25, claims 28-31 are patentable over Wark in view of Wolf for the same reason as claim 25.

With respect to independent claim 32, this claim recites, in part,

“a package including:

“a substrate having a top surface and a bottom surface, the substrate being attached to the first die; and

“a plurality of fourth bonding pads formed on the top surface of the substrate, no other bonding pads being formed on the top surface of the substrate; and

a plurality of bonding wires, the wires directly connecting the first bonding pads to the fourth bonding pads, no bonding wires connecting the second bonding pads to any fourth bonding pads.

It is unclear to applicant which structures the Examiner is reading to be the fourth bonding pads. However, to further prosecution, claim 32 has been amended and, as a result, there is no structure in Wark that can be read to be the fourth bonding pads. The bonding pads on PCB 22 can not be read to be the fourth bonding pads because no bonding wires can connect the second bonding pads to any fourth bonding pads. As shown in FIG. 2 of Wark, the second bonding pads

(read to be a number of the bonding pads on the top surface of die 26) are connected to the bonding pads on PCB 22 via bonding wires.

In addition, none of the bonding pads on the bottom surface of die 12 (as oriented in the FIG. 2) can be read to be the fourth bonding pads because the bonding wires must directly connect the first bonding pads (read to be a number of the bonding pads on the top surface of die 26) to the fourth bonding pads. As a result, claim 32 is patentable over Wark in view of Wolf.

In addition to claim 23, the Examiner also objected to claims 26 and 33-37, but indicated that these claims would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. Claims 26 and 33 have been amended to be in independent form, and are believed to include all of the limitations of the base claim and any intervening claims. Claims 34-37 have not been amended as these claims depend from claim 33. In the Advisory Action mailed December 16, 2003, the Examiner indicated that claims 26 and 33-37 would be allowable.

With respect to new claim 38, this claim recites, in part,

"a passivation layer formed on the interconnect, the passivation layer having a top surface and a plurality of edges that contact the top surface, the plurality of edges including a first edge, a second edge that opposes the first edge, a third edge, and a fourth edge that opposes the third edge;

"a number of first bonding pads formed on the passivation layer, the first bonding pads being electrically connected to the interconnect, a first plurality of first bonding pads lying closest to the first edge, a second plurality of first bonding pads lying closest to the second edge, a third plurality of first bonding pads lying closest to the third edge, a fourth plurality of first bonding pads lying closest to the fourth edge;

"a plurality of second bonding pads formed on the passivation layer, the second bonding pads being electrically connected to the interconnect, the first plurality of first bonding pads lying between the second bonding pads and the first edge, the second plurality of first bonding pads lying between the second bonding pads and the second edge, the third plurality of first bonding pads lying between the second bonding pads and the third edge, the

fourth plurality of first bonding pads lying between the second bonding pads and the fourth edge.”

If the passivation layer is read to be the top surface of die 26, then there is no structure which can be read to be the plurality of second bonding pads. As shown in FIG. 2 of the Wark reference, a number of bonding pads run around the periphery of the top surface of die 26 such that a first number lie adjacent to a first edge, a second number lie adjacent to a second opposite edge, a third number lie adjacent to a third edge, and a fourth number lie adjacent to an opposite fourth edge. However, from what applicant can determine, there are no bonding pads which can be read to be the plurality of second bonding pads. As a result, claim 38 is patentable over Wark in view of Wolf.

With respect to new claim 39, this claim recites, in part,

“a first die . . . ;

“a second die having a top surface, an opposing bottom surface, and a plurality of third bonding pads formed in the bottom surface, the bottom surface lying closer to the first die than the top surface, the top surface being free of any electrical connections;

If die 26 is read to be the first die of claim 39, and die 32 is read to be the second die of claim 39, then the Wark reference fails to teach or suggest that second die 32 has a top surface that is free of any electrical connections. As shown in FIG. 2 of the Wark reference, the top surface of second die 32 has a number of exposed bonding pads. As a result, claim 39 is patentable over Wark in view of Wolf.

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Thus, for the foregoing reasons, it is submitted that all of the claims are in a condition for allowance. Therefore, the Examiner's early re-examination and reconsideration are respectively requested.

Respectfully submitted,

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RESPONSE TO OFFICE ACTION
DATED AUGUST 21, 2003 AND ADVISORY
DATED DECEMBER 16, 2003

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APPENDIX

One replacement drawing sheet of FIG. 1.

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